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ABSTRACT

A total of 58 preservice teachers enrolled in an elementary childhood program at Fitchburg State College in Massachusetts were surveyed before and after taking a special math, science, and social studies course called Piggybacking. This course emphasizes child-centered and cooperative learning by allowing elementary school students to choose individual preservice teachers to work with on a one-to-one basis for an entire semester. The elementary school students learn math, science, and social studies concepts, and the preservice teachers learn by observing how children think and learn. Before enrolling in the course, the preservice teachers indicated high levels of concern about innovative methods such as child-centered and cooperative learning. After the course, however, levels of concern dropped by an average of 20 percent. (MDM)

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THE EFFECTIVENESS OF CHILD-CENTERED (PIGGYBACKING) APPROACH TO EARLY CHILDHOOD TEACHER EDUCATION

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The Effectiveness of Child-Centered (Piggybacking) Approach To Early Childhood Teacher Education

Introduction

Many child-centered strategies have been used in the past in the early childhood education of teachers. These methods are sometimes used in in-service education programs and other times by educators in colleges of education. The effectiveness of such methods can only be measured through a careful evaluation process. Hall (1976) studied the concerns of science teachers regarding an implementation of an innovative approach to teaching science and came to the conclusion that strategies for implementation would be correlated to concerns and should change as concerns shift; training in skills should be graduated and continuous; personal support is essential; and, further, evaluation of effects should be delayed until early teacher concerns have been resolved.

In their study, King and Nomishan (1987) studied the extent of the implementation of school evaluation as an in-service activity. Their study involved pre- and posttesting of measures of teacher attitude toward professional development and comparing them with the results of the Levels of Use of the innovation. They found that total involvement of teachers in the planning of activities and in the implementation of these activities was the key to the success of an innovative program. The present study used guidelines set by the Concerns Based Adoption Model [CBAM]. The use of this tool helps provide insight into personal dimension of change. This contention is based on the central and major premise of the CBAM -

that people who would be most affected by the change are the most important single factor in evaluating programs.

Research has identified seven kinds of concerns that users, or potential users, of an innovation have. These concerns are: awareness, informational, personal, management, consequence, collaboration, and refocussing (Hall, 1976). In this study, the CBAM concept was used to measure the concerns of pre-service teachers who were enrolled in early childhood education classes at Fitchburg State College. The questionnaire was given to students while taking the special math, science, and social studies course called "Piggybacking." This is a co-operative learning approach where elementary school children choose individual college students enrolled in the method course that they are to work with throughout the semester. Piggybacking is different from microteaching or reflective teaching in that all college students are involved each time a lesson is being taught, with each of them working on a one-to-one basis with the child that selected them. Through hands-on and "minds-on" experiences, elementary school children learn math, science, and social studies concepts while the pre-service teachers learn by observing how children think and learn. The same questionnaire was administered again while these pre-service teachers were on student teaching. The results were then compared.

An attempt was made to answer the following research questions:

1. What are the concerns of the math, science, and social studies students who are using "piggybacking" as a

teaching strategy?

2. To what extent are the feedback systems incorporated in the program being used?
3. Do students' use of the "piggybacking" process in reflective classroom situations at the College differ significantly from their use of the process during student teaching in all categories?

Methods and Procedures

The sample consisted of math, science and social studies pre-service teachers enrolled in early childhood programs at Fitchburg State College. There were 58 participants in all.

The basic instrument used in this study was the Concerns Based Adoption Model [CBAM]. The instrument consists of thirty-five items which ask for concerns about pupils' attitude toward the innovation; users' knowledge of the innovation; whether teachers are interested in using the process; exciting pupils about their part in the innovation; coordination efforts with others to maximize the innovation's success; and knowing what other users were doing that was different from the piggybacking process.

Other concerns the CBAM instrument identified included:

1. Familiarizing other teachers or students with the innovation.
2. Knowing how "my role will change when I am making use of the innovation."
3. Knowing how the present innovation is "better than what

we have now."

4. Willingness to "revise the innovation's instructional approach the instructor uses."

As part of the Levels of Use (LoU) instrument, structured interviews were conducted to identify the extent to which practicum teachers were achieving the overall objectives of the course such as:

1. Discussion and application of basic information about processes and sequences of how a child thinks with special focus applying mathematical, scientific, and social skills; and becoming aware of the range od individual differences underlying typical and atypical patterns of learning.
2. Ability to describe academic and social development utilizing quotes from the children which occurred during class meetings in "real" classroom situations.
3. Application of developmental appropriate practices to the education of young children, with and without special needs.
4. Utilization of on-going reflective journal normally culminating in in-depth research paper.
5. Awareness, acceptance, and affirmation of anti-bias curriculum, individual differences (including cultural differences), safe touching, sex-stereotyping and how these negatively affect human development.
6. Observing and interacting with the child using

naturalistic observation skills as well as participating as partners in actual hands-on lessons and activities in order to study the child's motor, cognitive, and social-emotional development.

7. Application and integration of the general knowledge gained with individual children in the process of hypothesizing how children perceive the world and what kinds of experiences are likely to be the most effective in teaching mathematics, science, and social studies to young children.

Interview questions solicited responses about the stages or categories that users (and prospective users) were involved in. For example, the question "Can you describe the piggybacking process you are engaged in right now?" was aimed at probing for Knowledge category. If the innovation can be described and there is evidence of how it can be used on a day-to-day basis (i.e. in the short-run), then the user is considered to be at the Level III (Mechanical) level of use.

The levels of use instrument developed by Loucks, Newlove, and Hall (1975) of the University of Texas start with Level 0 (Non-Use) and include Level I (Orientation), Level II (Preparation), Level III (Mechanical Use), Level IV (Routine), Level V (Integration), and Level VI (Renewal). The user is at a particular level regardless of whether he/she is acquiring information, sharing, planning, status reporting, or performing.

Results

All the 58 students in the pretest group returned the survey for a return of 100%. Of this number, 17 questionnaires were unusable due to incomplete information. A total of 28 students or 68% in the posttest group returned the survey.

Analysis of participants' concern showed that before students went out to teach, they had high concern with respect to "pupils' attitude toward this innovation," (66%), their inability to have "enough time to organize" themselves each day (100%), conflict between the teacher's interests and his/her responsibilities (80%), resources available if people decide to follow the innovation (80%), and the teacher's inability to manage all that the innovation entailed (86%).

Other areas that showed significant concern included (1) the evaluation of the impact of the program on pupils (93%); (2) time spent preparing and obtaining resources related to the innovation (100%); (3) desire to have more information on time and energy commitments required by the innovation (99%); and (4) time taken to coordinate activities and people so as to enhance the success of the program (87%).

It is important to note that by the time students became engaged in student teaching and were able to use the strategies they learned during piggybacking, their level of concern dropped by an average of 20 percentage points. These students also showed a significantly high level of use of the innovation.

A descriptive analysis of the level of use interview appeared

TABLE I

Concern of Students in Methods Course

Question	Percent With Low Concern	Percent With High Concern	% Non-Concern
1	33	66	1
2	70	27	3
3	27	72	1
4	0	100	0
5	66	34	0
6	31	69	0
7	19	79	1
8	26	74	0
9	19	80	1
10	12	88	0
11	20	80	0
12	60	39	1
13	6	93	1
14	23	59	18
15	26	74	0
16	19	81	0
17	12	79	9
18	54	45	1
19	12	88	0
20	19	66	15
21	40	60	0
22	12	80	8
23	33	67	0
24	6	94	0
25	6	94	0
26	6	86	8
27	12	87	1
28	1	99	0
29	6	80	14
30	80	20	0
31	19	73	8
32	27	73	0
33	12	79	9
34	13	87	0
35	6	92	2

TABLE II

Concern of Students During Student Teaching

Question	Percent With Low Concern	Percent With High Concern	% Non-Concern
1	53	46	0
2	81	17	2
3	70	30	0
4	0	100	0
5	76	24	0
6	70	30	0
7	78	20	2
8	67	33	0
9	9	90	1
10	92	8	0
11	10	90	0
12	80	19	1
13	17	83	0
14	13	79	8
15	10	90	0
16	94	6	0
17	40	50	10
18	50	50	0
19	2	98	0
20	20	70	10
21	60	40	0
22	10	90	0
23	63	37	0
24	0	100	0
25	5	95	0
26	53	45	2
27	64	36	0
28	0	100	0
29	5	90	5
30	100	0	0
31	2	94	2
32	12	88	0
33	70	0	30
34	35	65	0
35	45	51	4

FIGURE 1

Students' Comments on Piggybacking Process

1. "This is a great program. More colleges should use this innovation. ...you (the instructor) have enthusiasm and open-mind."
2. "The right attitude is a must for this class."
3. The questionnaire appears to be more relevant to practicing teachers.
4. The program is positive.
5. "The concept of piggybacking may be used in pre-school, K-1. In grades 2-3 the teaching methods break down. I wish I have more knowledge of the other methods of teaching math, science and social studies. ... hands-on activities are good, but when the school requires you to use manuals and worksheets, then a teacher must know how best to use them."